

Progressive Approach to Rates, Revenue Stability and Water Conservation: IRWD's Allocation-Based Rate Structure

***Presentation to City of San Diego Water Policy
Implementation Task Force***

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Irvine Ranch Water District





Overview

Irvine Ranch Water District

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- IRWD Agency Characteristics
 - Rationale for Allocation-Based Rate Structure
 - How it Works
 - Allocations
 - Variances
 - Courtesy Adjustments
 - Over-Allocation Revenues
 - Results
 - Implementation
 - Conclusion



About IRWD

Irvine Ranch Water District

- California Special District providing:
 - Water
 - Wastewater
 - Recycled water
 - Urban runoff treatment
- Governed by a five-member publicly elected Board of Directors (four-year terms)





IRWD by the Numbers

Irvine Ranch Water District

- Formed in 1961 by landowners to supply irrigation water (population 300)
- 2012 total population served is 337,900
- Service area of 181 square miles - about 20% of Orange County
- 1,169 miles of potable water pipeline
- 407 miles of recycled water pipeline
- 940 miles of sewer pipeline
- 101,690 metered connections
- 300 Employees



Rationale for Allocation-Based Rates

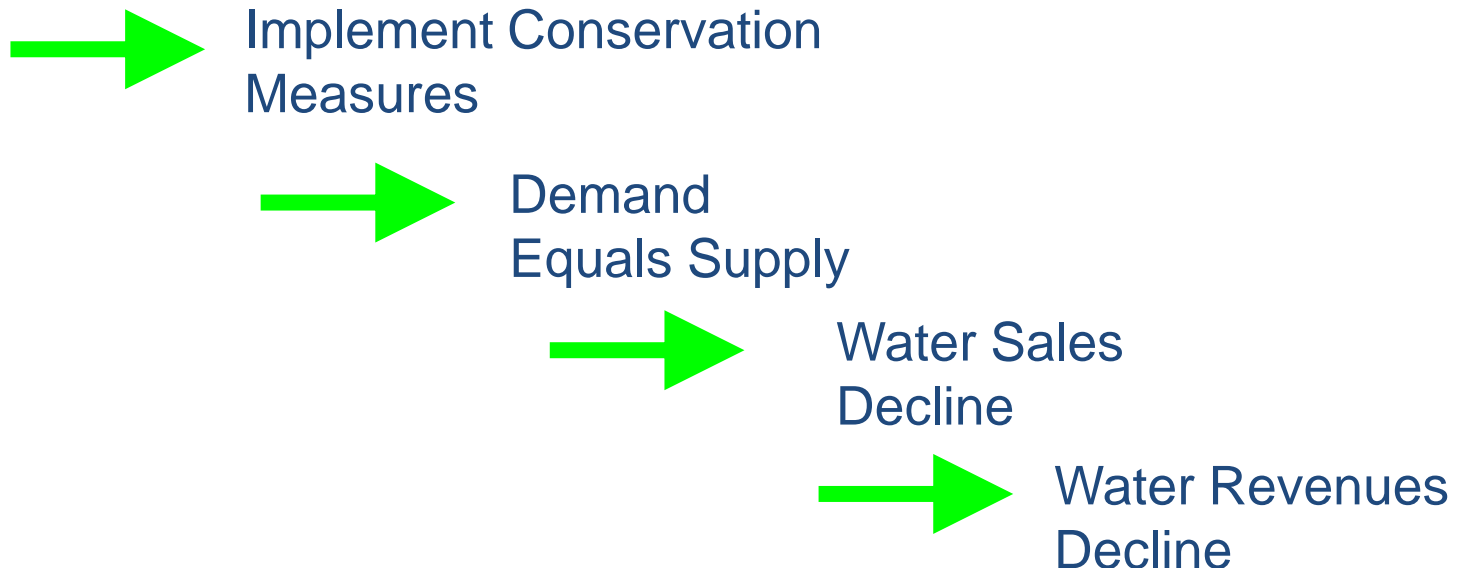




IRWD Rate Structure History

Irvine Ranch Water District

- Uniform Rates 1960's – 1980's
- Did not effectively promote conservation
- Revenue stability problems during periods of drought





Issue of Fixed Cost Recovery

Irvine Ranch Water District

- Fixed cost recovery through volumetric charges can be negatively impacted by economy, climate, drought and conservation measures
- Lower water sales could mean fixed operating costs might not be covered
- 20 x 2020 mandate (2009) – requires 20% permanent reduction in statewide water demand from baseline use by 2020
- Agency's revenue stability could be reduced



IRWD's Approach to Revenue Stability

Irvine Ranch Water District

- IRWD developed approach to recover fixed costs through its rate structure in the mid-1980's
- Separate fixed and commodity charges
- Recover fixed charges through monthly service charge
- Provided revenue stability
- Uniform rates and separate fixed cost recovery did not effectively incentivize water use efficiency



IRWD's Approach to Effective Conservation

Irvine Ranch Water District

Implemented Allocation-Based Tiered Rates 1991

- Tiers and rates tied to efficient water use
- Highest tiers and rates linked to inefficient and wasteful use
- Provided **revenue stability and** strong economic signal that encouraged **significant conservation**



Allocation Based Rates: Benefits

Irvine Ranch Water District

Agency Perspective:

- Maintain revenue stability and promote conservation
 - Maintain revenue stability through separate fixed and commodity charges
 - Encourage conservation through a strong commodity pricing mechanism
 - Eliminate wasteful use
 - Reduce incremental costs to customers



Allocation Based Rates: Benefits

Irvine Ranch Water District

Customer Perspective:

- Equitable
- Based on supportable data
- Easy to communicate, understand
- Tied to cost of service

Provide high level of service at lowest cost
through efficient use of resources

How It Works

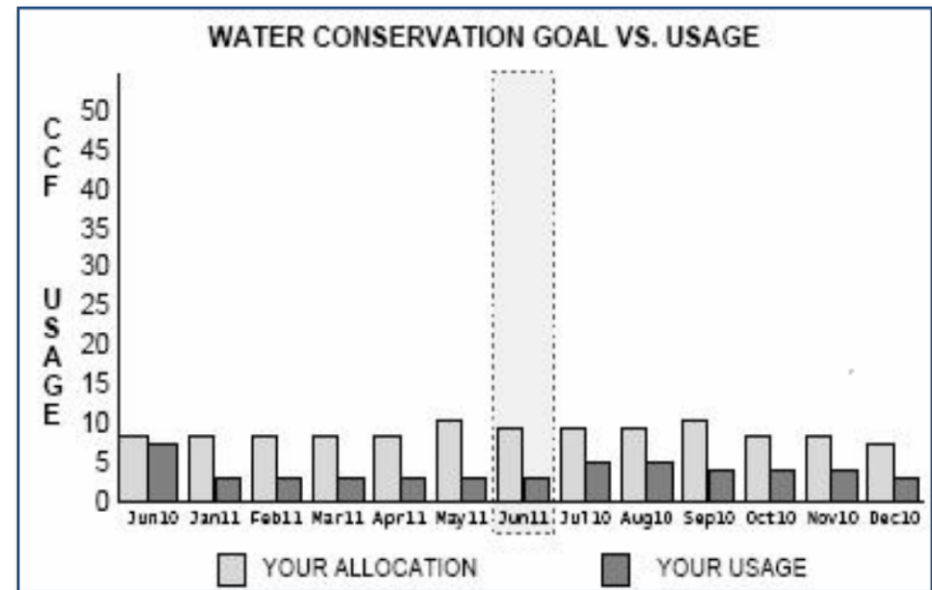




Fair and Equitable

Irvine Ranch Water District

- Research-based; not arbitrary
- Encourage use within allocation through a **significantly** tiered commodity pricing system
- Education/long-term behavioral change
- Sustainable - not just short-term drought response





Basic Allocations - Residential

Irvine Ranch Water District

- Single-Family Residence

- 4 Occupants
- 55 Gallons Per Person Per Day
- 1,300 Square Feet of Landscaping



- Townhouse/Condominium

- 3 Occupants
- 55 Gallons Per Person Per Day
- 435 Square Feet of Landscaping



- Apartment

- 2 Occupants
- 55 Gallons Per Person Per Day
- No Landscaping





Indoor Allocation

Irvine Ranch Water District

Residential Indoor Use: 4 Person Household

Allocation Comparison	Gallons Per Person Per Day	People Per Household	Gallons Per Household Per Day
IRWD Allocation (Established 1991)	75	4	300
Avg. Indoor Use Non-Conserving Home (1997 AWWARF Study)	70	4	280
IRWD Allocation Adopted July 1, 2009	55	4	220
IRWD Service Area Residential End Use Study Ave. Indoor Use (2008)	45	4	180
Avg. Indoor Use Conserving Home (Water Use and Conservation, 2001)	45	4	180
EPA Study Retrofitted Home (2008)	30	4	120



Example Residential Allocation

Irvine Ranch Water District



Single Family Detached House (4 residents)

+

Outdoor Allocation:

- Irrigated area (GIS mapping)
- Seasonal needs (ET Data)
- Warm season turf
- 71% irrigation efficiency

+

Variances:

- Pool
- Additional occupants
- Medical needs
- Others (livestock, etc.)



Outdoor Allocation

Irvine Ranch Water District

Landscape Allocation = $\frac{\text{ET} \times \text{Crop Coefficient (Warm Season Turf)}}{\text{Irrigation Efficiency}}$

	Crop Co-efficient	Irrigation Efficiency	ET Adjustment Factor
IRWD's Allocation (1991)	0.8	80%	1.0
IRWD's Updated Allocation (2009)	0.6	71%	0.84
Model Ordinance (1992)	0.5	62.5%	0.8
Landscape Task Force (2005)	0.5	71%	0.7



Commercial Allocations

Irvine Ranch Water District

Site-Specific Based On:

- Historic use initially; customized over time
- Equipment (e.g. cooling towers, processes)
- Number of employees
- Landscaped area





Allocation-Based Rate Structure - Residential

Irvine Ranch Water District

TIER	BREAK POINT (% of Allocation)	RATE	
Low Volume	0 - 40%	\$0.91	} 100% of water needed for indoor/ outdoor uses
Base	41-100%	\$1.24	
Inefficient	101-150%	\$2.76	
Excessive	151-200%	\$4.70	
Wasteful	201+%	\$9.84	

- Rates effective July 1, 2012



Allocation-Based Rate Structure - Landscape

Irvine Ranch Water District

TIER	BREAK POINT (% of Allocation)	RATE**	
Low Volume	0 - 40%	\$0.91	} 100% of water needed
Base	41-100%	\$1.24	
Inefficient	101-110%	\$2.76	
Excessive	111-120%	\$4.70	
Wasteful	121+%	\$9.84	

**Potable Rate. Discount for recycled water.



Effectiveness of Price Signal

Irvine Ranch Water District

Allocation for Bill Period: 15 CCFs

	Rate	Customer A: Usage = 15		Customer B: Usage = 34	
USAGE - LOW VOLUME	0.91	6	\$ 5.46	6	\$ 5.46
USAGE - BASE RATE	1.24	9	\$ 11.16	9	\$ 11.16
USAGE - INEFFICIENT	2.76		\$ -	8	\$ 22.08
USAGE - EXCESSIVE	4.70		\$ -	7	\$ 32.90
USAGE - WASTEFUL	9.84		\$ -	4	\$ 39.36
Commodity Charges \$ 16.62				Commodity Charges \$ 110.96	
Monthly Service Fee \$ 9.30				Monthly Service Fee \$ 9.30	
TOTAL BILL \$ 25.92				TOTAL BILL \$ 120.26	



Variance Adjustment Policies

Irvine Ranch Water District

- Standardized policies and requirements; equitable
- Recognize there can be adjustments to allocations or special circumstances
 - goal is to motivate behavior change, and correct the wasteful use; not penalize for additional needs
- Customer has shared responsibility to ensure appropriate allocation
 - need to submit required information
- Approved variance is effective on the date it is submitted to the District



Allocation Refinements: Variance Process

Irvine Ranch Water District

- Documentation requirements based on type of variance, such as:
 - Proof of number of residents
 - Doctor's note (medical needs)
 - Irrigation plans/measurements
 - Assessment of water use
- All new customers receive a variance application and instructions, also available on website
- Two types:
 - **Permanent**: i.e. landscape acreage
 - **Temporary**: set with an expiration date, bill system automatically generates renewal notices





Number of Variances

Irvine Ranch Water District

Variance Description	Count	Percent of Total Accounts
DETACHED HOME - MORE THAN FOUR PERMANENT RESIDENTS.	2,437	2%
DETACHED HOME - LANDSCAPED AREA GREATER THAN 1300 SQUARE FEET*	20,153	20%
ATTACHED HOME - MORE THAN THREE PERMANENT RESIDENTS.	1,117	1%
ATTACHED HOME - LANDSCAPED AREA GREATER THAN 435 SQUARE FEET	1,542	1%
APARTMENT - MORE THAN TWO PERMANENT RESIDENTS.	1,157	1%
MEDICAL NEEDS - REQUIRES VERIFIABLE MEDICAL DOCUMENTATION	80	0%
LICENSED CHILD CARE FACILITY (IN A RESIDENTIAL UNIT)	51	0%
OTHER SUBMIT SEPERATE WRITTEN REQUEST AND SUPPORTING DOCUMENTATION.	658	1%

* Majority of landscaped area variances automatically generated by IRWD



Allocation Based Rates: Benefits

Irvine Ranch Water District

- Customers in “Over-allocation” Tiers:

“Inefficient”	=	14% (<i>most of 14% only slightly in this tier</i>)
“Excessive”	=	3%
“Wasteful”	=	2%
		<hr/>
		19%

- Revenue collected from over-allocation tiers is “reinvested” in Demand Management and Efficiency Programs
 - Water Conservation Programs
 - Urban Runoff Control Programs
 - “Low Volume” Incentive
 - Other Efficiency Programs



Rate Structure Funds Water Efficiency

Irvine Ranch Water District

- Free surveys and customer assistance
- Education, workshops and outreach
- Financial incentives for high efficiency fixtures
- Turf removal incentives and other landscape programs



Results





Effectiveness of Allocation-Based Rates

Irvine Ranch Water District

Results:

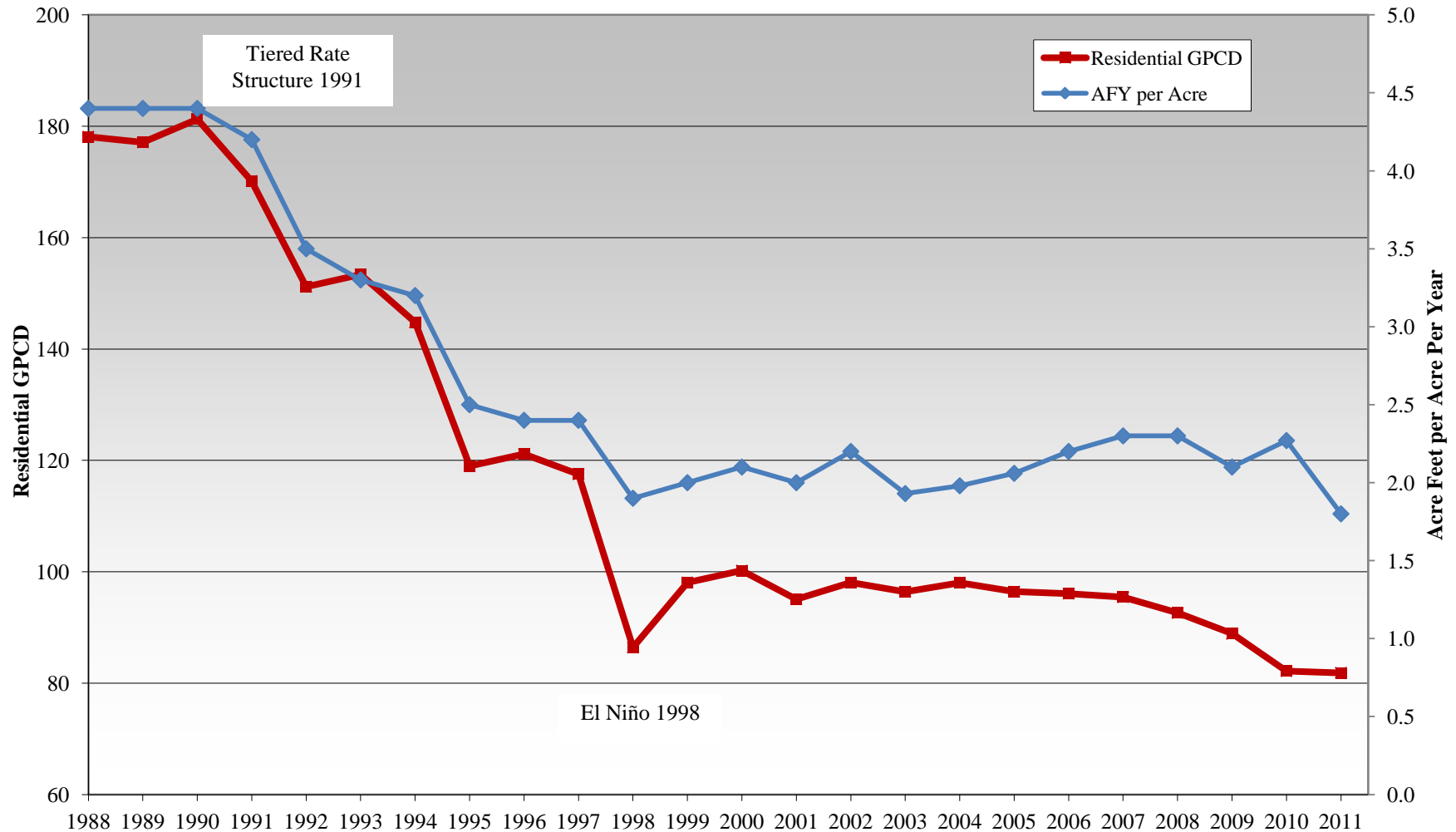
- Immediate reduction of 0.5 acre-foot/acre in first six months following rate structure adoption
- Landscape use has **dropped 50%** from 4.4 to average of 2.2 acre-feet/acre/year
- Residential use has **dropped 52%** from 170 gpcd to 82 gpcd
- Strong economic signal and customer outreach – less than 3% of residential customers pay highest tier charges in any given month



Effectiveness of Allocation-Based Rates

Irvine Ranch Water District

IRWD Residential and Landscape Water Usage 1988-2011



Implementation





Rate Structure Implementation

Irvine Ranch Water District

What's Needed

- Customer database and method to develop allocations
- Evapotranspiration data – readily available at no cost
- Customer Service follow-through:
 - Billing Adjustments (leaks)
 - Service Establishment
- Changes to billing engine
 - No substantive changes were made to accommodate the allocation-based rate structure
 - Off-the-shelf billing programs are available
- Customer transition/education plan
- Political support



Rate Structure Implementation

Irvine Ranch Water District

Lessons Learned

- Allocation system works in diverse neighborhoods
 - Former Santa Ana Heights Mutual Water Company - older
 - Former Los Alisos Water District – varying lot sizes
 - Former Santiago County Water District – semi-rural
- Implemented in all cases within 6 – 12 months
- Very high customer satisfaction
 - Over 95% rating
 - Equitable



Other Agencies with this Rate Structure

Irvine Ranch Water District

Different customer bases, ages of system, climates

- Redwood City
- Eastern Municipal Water District
- Monte Vista Water District
- Western Municipal Water District
- Moulton Niguel Water District
- El Toro Water District
- City of San Juan Capistrano
- Coachella Valley Water District
- Centennial Water and Sanitation District, CO
- City of Boulder, CO
- Town of Castle Rock, CO



Conclusions

Irvine Ranch Water District

Allocation-based Rate Structure:

- Provide high level of customer satisfaction— fair and equitable
- Communicates value of water – rewards appropriate water use
- Foundational tool for water use efficiency
- Identifies over-use customers for assistance
- Funds critical conservation programs
- Promotes strong conservation and efficient use of water resources
- Provides revenue stability
- Provides exceptional results



Questions?

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